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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1,3-8,13-18 and 20-23_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1, 3-8, 13-18, 20-23_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

       1. ☐ Certified copies of the priority documents have been received.

       2. ☐ Certified copies of the priority documents have been received in Application No. _____.

       3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Specification

1.   Applicant canceled Claims 2, 9-12, and 19 from parent application 09/470,481.

2.   The disclosure is objected to because of the following informalities: on Page 1,

paragraph [0005], Line 8 of PG Pub. No. 2004/0194142 A1, dated Sep. 30, 2004,

"Toronoto" should be corrected to read - Toronto -. On Page 5, paragraph [0070], Line

4, in order for the exemplary method shown in FIG. 4 to apply, the word "not" should

follow the word "will" to read - k will not be played -. Further, on Page 8, paragraph

[0113], Line 6, "Table 1" discussed in this paragraph is not in the specification or

drawings.

      Appropriate corrections are required.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claim 13-15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated

by Horne, U.S. Patent No. 5,515,377.

      a. Regarding Claim 13, Horne discloses a system for data packet transmission,

the system comprising:

a central transmission unit (Fig. 1) including a unit controller coupled to a unit buffer (FIG. 1, elements 20 and 40) and a unit transceiver (FIG. 1, element 65), the unit buffer also being coupled to the unit transceiver, the unit buffer storing a plurality of data packets for selective transmission by the unit transceiver (column 3, lines 33-39); a transmission channel that carries the plurality of data packets transmitted by the unit transceiver (FIG. 1, element 70), wherein, the unit controller controls selective transmission of the plurality of data packets from the unit transceiver along the transmission channel to client equipment (FIG. 1, element 95).

A controller coupled to the buffer and transceiver is inherently disclosed, as it is a necessary element of any computerized system such as this one.

b. Regarding Claim 14, Horne discloses a system for data packet transmission of claim 13, wherein the plurality of data packets are video data packets (column 3, lines 28-39).

c. Regarding Claim 15, Horne discloses a system for data packet transmission of claim 13, wherein the client equipment comprises:

a client transceiver that receives the selectively transmitted data packets from the unit transceiver along the transmission channel (FIG. 1, element 75)

a client equipment controller coupled to the client transceiver to control reception of the data packets (It is inherent in such a system that there must be a

client equipment controller, such as a central processing unit, coupled to, and
controls, the transceiver)

a client smoothing buffer that stores the data packets under the control of the
client equipment controller (FIG. 1, elements 80 and 85)

a client smoothing buffer being coupled to the client equipment controller (It is
inherent in such a system that there must be a client equipment controller, such as a
central processing unit, coupled to, and controls, the smoothing buffer)

a client data play-out mechanism that plays-out the data packets from the
client smoothing buffer (FIG. 1, element 90) under the control of the client equipment
controller, the client data play-out mechanism being coupled to the client equipment
controller (It is inherent in such a system that there must be a client equipment
controller, such as a central processing unit, coupled to, and controls, the play-out
mechanism).

d. Regarding Claim 17, Horne discloses a system for data packet transmission
of claim 13, further comprising:

a server that provides the plurality of data packets (FIG. 1, element 15)

a wired channel coupled to the server that carries the plurality of data packets
to a wired network from the server, the wired channel also being coupled to the central
transmission unit to provide the plurality of data packets to the central transmission unit
for transmission to the client equipment (column 3, lines 36-39). In the invention of
Horne, the "server" (TWO-LAYER VIDEO ENCODER, element 10) and the "central

transmission unit" are one in the same; however, the functionality of the single device

could be split into multiple devices connected by a wired channel as is well known in the

art.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

6. **Claims 1, 3, 8, 18, and 22 are rejected under 35 U.S.C. 103(a) as being**

unpatentable over Horne in view of Hauser et al., U.S. Patent No. 6,155,748.

a. Regarding Claim 1, Horne discloses a system of transmitting data packets

comprising (FIG.1)

identifying a priority of each packet of a plurality of packets to be transmitted

(column 3, lines 36-39)

receiving the transmitted packets (column 8, lines 63-67 and column 9,

lines 1-4)

smoothing the received data packets (column 8, lines 63-67 and column 9,

lines 1-4)

playing-out the smoothed packets (column 9, lines 4-10)

However, Horne does not disclose a method of selectively transmitting higher

priority packets before transmitting lower priority packets by calculating a probability

of higher priority packets being delivered prior to play-out times for the higher priority

packets and transmitting a packet only if this probability is greater than a set threshold.

Hauser discloses a method of transmitting data packets with multiple prioritized buffer subsets wherein higher priority packets are transmitted before lower priority packets (column 11, lines 63-66). Hauser also discloses calculating a link congestion counter that is compared to a specified threshold after which point only higher priority packets are transmitted (column 12, lines 13-37). This threshold can be set dynamically based on traffic data in the downstream buffer (column 12, lines 3-7). This reads on calculating a probability and comparing it to a set threshold to determine whether to transfer a lower priority packet.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Horne and Hauser to selectively transmit higher priority packets before transmitting lower priority packets by calculating a probability of higher priority packets being delivered prior to play-out times for the higher priority packets and transmitting a packet only if this probability is greater than a set threshold.

b. Regarding Claim 3, Horne in view of Hauser disclose a method of transmitting data packets of claim 1, wherein the step of selectively transmitting is performed based on channel conditions of channels upon which the data packets are transmitted (Hauser, column 11, lines 63-66).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Horne and Hauser to transmit data packets of claim 1, wherein the step of selectively transmitting is performed based on channel conditions of channels upon which the data packets are transmitted.

    c.   Regarding Claim 8, Horne in view of Hauser discloses a method as stated above in Claim 1. What is not disclosed however is that the set threshold is between .7 and .9. Official Notice is hereby taken that a probability of success for transmitting a data packet that is higher than a given threshold means selecting an appropriate lower limit. This lower limit would have to be chosen such that high priority packet is always transmitted on time. Consequently, the threshold would have to be such that there is a very high probability of success (such as 70%, 80% or 90%).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Horne in view of Hauser with an appropriate transmission threshold in order to guarantee delivery of priority packets.

    d.   Regarding Claim 18, Horne discloses a system as stated above in Claim 13. Horne in view of Hauser disclose a system wherein the unit controller controls selective transmission of data by calculating a probability of higher priority packets being delivered prior to play out time as stated above in Claim 1.

e.   Regarding Claim 22, it is recited as applied to Claim 8 above.

7.   **Claims 4-6 are rejected under 35 U.S.C. 103(a) as being obvious over Horne in view of Hauser and further in view of IEEE Publication "A General Optimal Video Smoothing Algorithm," herein referenced by name of the author Jiang.**

a.   Regarding Claim 4, Horne in view of Hauser discloses a method as stated above in Claim 1. What is not disclosed, however, is the step of smoothing the received data packets includes storing the received packets in a smoothing buffer and generating a transmission schedule, which includes the rates at which the data packets will be played-out.

Jiang discloses a video smoothing algorithm for smoothing received data packets by storing them in a smoothing buffer (Chapter 2.1, paragraph 1, lines 6-8) and a transmission schedule is generated including the rates at which the data packets will be played out (Chapter 2.1, paragraph 1, lines 8-23). Jiang is evidence that ordinary workers in the art at the time the invention was made would appreciate the use of a smoothing buffer that generates a transmission schedule in a video broadcasting application.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the method of Horne in view of Hauser with the smoothing buffer and transmission schedule of Jiang in order to improve network efficiency and presentation quality of real-time video transmission over a network with dynamic congestion.

b.   Regarding Claim 5, Horne in view of Hauser and further in view of Jiang discloses a method as stated above in Claim 4. Jiang further discloses that generating the transmission schedule is performed based on a size of a buffer that will store received packets, available bandwidth and allowed play-out delay (Chapter 2.1, paragraph 1, lines 8-23), available bandwidth (Chapter 2.1, lines 3-6) and allowed play-out delay (Chapter 2.2, paragraph 2, lines 1-4).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the method of Horne in view of Hauser with the teachings of Jiang for generating transmission schedule based on performance and on size of a buffer that will store received packets, available bandwidth and allowed play-out delay.

c.   Regarding Claim 6, Horne in view of Hauser and further in view of Jiang discloses a method as stated above in Claim 4. Jiang further discloses that the transmission schedule is designed so that the smoothing buffer does not overflow or underflow during play-out of the received data packets (Chapter 2.1, paragraph 1, lines 8-10).

8.   **Claims 7 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horne in view of Hauser and in further view of Mobile Networks and Applications, Volume 1, Issue 3, Special issue on wireless ATM, "Wireless ATM - an overview," herein referenced by name of the author Awater.**

a.   Regarding Claim 7, Horne in view of Hauser discloses a method as stated above in Claim 1. What is not disclosed, however, is the step of selectively transmitting performs transmission over wireless channels.

Awater discloses wireless ATM has been firmly established as a promising area of research, product development and standardization (page 243, section 7., lines 1-3).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the method of Horne in view of Hauser in further view of Awater in order to transmit over wireless channels.

b.   Regarding Claim 20, Horne discloses a system as stated above in Claim 13. Horne in view of Hauser further discloses a system wherein the unit controller controls selective transmission by the unit transceiver based on conditions of the network upon which the data packets are transmitted as stated above in claim 3. What is not disclosed, however, is the use of a wireless channel. Awater discloses wireless ATM has been firmly established as a promising area of research, product development and standardization (page 243, section 7., lines 1-3).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the method of Horne in view of Hauser in further view of Awater in order to transmit over wireless channels.

9.   Claims 16 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horne in view of Jiang.

a. Regarding Claim 16, Horne discloses a system as stated above in Claim 15. What is not disclosed, however, is that the unit controller generates the transmission schedule based on a size of the client smoothing buffer, available transmission channel bandwidth and allowed play-out delay.

Jiang discloses a system as stated above in Claim 4 with a transmission schedule based on a size of the buffer, available bandwidth, and allowed play-out delay. Jiang is evidenced that ordinary workers in the art at the time the invention was made would appreciate the use of a smoothing buffer that generates a transmission schedule in a video broadcasting application.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Horne with the smoothing buffer and transmission schedule of Jiang in order to improve network efficiency and presentation quality of real-time video transmission over a network with dynamic congestion.

b. Regarding Claim 21, Horne discloses a system as stated above in Claim 13. What is not disclosed, however, is that the controller generates a transmission schedule, which includes the rates at which the data packets will be played-out by the client equipment.

Jiang discloses the generation of a transmission schedule as stated above in

Claim 4 including the rates at which the data packets will be played out by the client

equipment (Chapter 2.1, paragraph 1, lines 14-23). Jiang is evidenced that ordinary

workers in the art at the time the invention was made would appreciate the use of a

smoothing buffer that generates a transmission schedule in a video broadcasting

application.

Therefore, it would have been obvious to one having ordinary skill in the art at

the time the invention was made to modify the system of Horne with the smoothing

buffer and transmission schedule of Jiang in order to improve network efficiency and

presentation quality of real-time video transmission over a network with dynamic

congestion.

10. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horne
in view of Mobile Networks and Applications, Volume 1, Issue 3, Special issue on
wireless ATM, "Wireless ATM - an overview," herein referenced by name of the
author Awater.

Regarding Claim 23, Horne discloses a system as stated above in Claim 13.

What is not disclosed, however, is wherein the central transmission unit is a base

station and the transmission channel is a wireless channel.

Awater discloses wireless ATM has been firmly established as a promising area

of research, product development and standardization (page 243, section 7., lines 1-3).

Awater further discloses the use of a base station in support of wireless ATM (page 237,

section 1.5, paragraph 4, lines 11-13 and Fig. 6).

Therefore, it would have been obvious to one having ordinary skill in the art at

the time the invention was made to further modify the method of Horne in view of

Awater to utilize a base station as the central transmission unit and the transmission

channel be wireless.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

a. U.S. Patent No. 5,481, 312 to Cash et al. discloses a system for transmitting

video with a high and low priority stream with different probabilities of success.

b. U.S. Patent No. 6,535,485 to Story discloses a system for detecting network

congestion level and applying higher compression to transmitted data.

c. U.S. Patent No. 6,014,694 to Aharoni et al. discloses a system for

transmitting video with an adjustable compression ratio to accommodate different

bandwidths.

12. Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Lorenzo C. Aragon whose telephone number is (571)

270-3727. The examiner can normally be reached on 8:00 AM - 10:00 PM M-F, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu Le can be reached on (571) 272-7332. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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